AMENDMENTS TO THE CLAIMS

1. (**Currently amended**) A method of transmitting data signals from at least one transmitting terminal with a spatial diversity capability simultaneously to a plurality of at least two receiving user terminals, each having a spatial diversity receiving capability, the method comprising:

dividing data signals into a plurality of streams of sub-user data sub-signals;

determining combined data signals in the at least one transmitting terminal, said combined data signals being transformed versions of said streams of data sub-signals, said determining being designed such that at least one spatial diversity device of the receiving user terminals only receives data sub-signals being specific for the corresponding receiving user terminal and having interference between at least two streams of the plurality of streams of sub-user data sub-signals;

inverse subband processing of said combined data signals;

transmitting, simultaneously to the plurality of receiving terminals, with said at least one spatial diversity device said inverse subband processed combined data signals; and

simultaneously on each of the plurality of receiving terminals:

receiving data signals on at least one of said receiving terminals by at least one the spatial diversity receiving device of the receiving terminal, said received data signals being at least a function of said inverse subband processing of said combined data signals;

determining on at least one of said the receiving terminals estimates of said data sub-signals from said received data signals; and

collecting by the receiving terminal said estimates of said data sub-signals into estimates of said data signals.

2. (**Cancelled**).

3. (Original) The method of Claim 1, wherein the spectra of said inverse subband processed combined data signals are at least partly overlapping.

4. (Original) The method of Claim 1, wherein determining combined data signals in said transmitting terminal is carried out on a subband by subband basis.

5. (Original) The method of Claim 1, wherein determining said estimates of said data sub-signals in said receiving terminals comprises subband processing.

6. (Original) The method of Claim 5, wherein said subband processing comprises orthogonal frequency division demultiplexing.

7. (Original) The method of Claim 1, wherein determining combined data signals in said transmitting terminal comprises:

> determining intermediate combined data signals by subband processing said data signals; and

> determining said combined data signals from said intermediate combined data signals.

8. (Original) The method of Claim 7, wherein said subband processing comprises orthogonal frequency division demultiplexing.

9. (Original) The method of Claim 1, wherein said inverse subband processing comprises orthogonal frequency division multiplexing.

10. (Original) The method of Claim 1, wherein:

> said subbands, being involved in inverse subband processing, are grouped into sets, at least one set comprising at least two subbands;

> determining combined data signals in said transmitting terminal comprises:

>> determining relations between said data signals and said combined data signals on a set-by-set basis; and

>> exploiting said relations between said data signals and said combined data signals for determining said data signals.

11. (Original) The method of Claim 1, wherein in said inverse subband processed combined data signals a guard interval is introduced.

12. (Original) The method of Claim 1, wherein determining combined data signals further comprises transmitter filtering, and wherein determining estimates of said sub-signals comprises receiver filtering, said transmitter filtering and said receiver filtering being determined on a user-per-user basis.

13. (Original) The method of Claim 1, wherein the number of said streams of data sub-signals is variable.

14. (Original) The method of Claim 1, wherein the number of said streams is selected in order to minimize the error between said estimates of said data sub-signals and said data sub-signals.

15. (Original) The method of Claim 1, wherein the number of said streams is selected in order to minimize the system bit error rate.

16-20. (**Cancelled**)

21. (**Currently amended**) An apparatus for transmitting inverse subband processed combined data signals to a plurality of at least two receiving user terminals with a spatial diversity device, the apparatus comprising:

at least one spatial diversity transmitter;

circuitry configured to divide data signals into streams of data sub-signals;

circuitry configured to determine combined data signals, said combined data signals being transformed versions of said streams of data sub-signals such that at least one spatial diversity device of said receiving user terminals only receives data sub-signals being specific for the corresponding receiving user terminal and having interference between at least two streams of the plurality of streams of sub-user data sub-signals;

circuitry configured to inverse subband process combined data signals; and

circuitry configured to transmit inverse subband processed combined data signals with said spatial diversity device,

wherein the combined data signals are determined such that, when the inverse subband processed combined data signals are transmitted simultaneously to the plurality of receiving terminals, at least one spatial diversity device of the receiving user terminals only receives data sub-signals being specific for the corresponding receiving user terminal and having interference between at least two streams of the plurality of streams of sub-user data sub-signals.

22. (Original) The apparatus of Claim 21, wherein said circuitry configured to combine data signals comprises a plurality of circuits each configured to combine data signals based at least on part of the subbands of said data sub-signals.

23. (Original) The apparatus of Claim 21, wherein said spatial diversity transmitter comprises at least two transmitters and said circuitry configured to transmit inverse subband

processed combined data signals comprises a plurality of circuits, each being configured to transmit said inverse subband processed combined data signals with one of said transmitters of said spatial diversity device.

24. (**Cancelled**)

25. (Cancelled)

26. (Cancelled)

27. (Cancelled)

28. (**Currently amended**) A system for transmitting data signals from at least one transmitting terminal with a spatial diversity capability simultaneously to a plurality of at least two receiving user terminals, each having a spatial diversity receiving capability, the system comprising:

means for dividing data signals into a plurality of streams of sub-user data sub-signals;

means for determining combined data signals in the at least one transmitting terminal, said combined data signals being transformed versions of said streams of data sub-signals, said determining being designed such that at least one spatial diversity device of the receiving user terminals only receives data sub-signals being specific for the corresponding receiving user terminal and having interference between at least two streams of the plurality of streams of sub-user data sub-signals;

means for inverse subband processing of said combined data signals;

means for transmitting, simultaneously to the plurality of receiving terminals, with said at least one spatial diversity device said inverse subband processed combined data signals;

means for receiving data signals, simultaneously on each of the plurality of receiving terminals, by the on at least one spatial diversity receiving device of at least one of said receiving terminals received data signals, said received data signals being at least a function of said inverse subband processed combined data signals;

means for determining, on each of the plurality of receiving terminals, on at least one of said receiving terminals estimates of said data sub-signals from said received data signals; and

means for collecting, on each of the plurality of receiving terminals, said estimates of said data sub-signals into estimates of said data signals.

29. (Original) The system of Claim 28, wherein said transmission of said inverse subband processed combined data signals is performed in a substantially simultaneous way.

30. (Original) The system of Claim 28, wherein the spectra of said inverse subband processed combined data signals are at least partly overlapping.

31. (Original) The system of Claim 28, wherein said means for determining combined data signals in said transmitting terminal comprises means for determining on a subband by subband basis.

32. (Original) The system of Claim 28, wherein said means for determining said estimates of said data sub-signals in said receiving terminals comprises means for subband processing.

33. (Original) The system of Claim 32, wherein said means for subband processing comprises orthogonal frequency division demultiplexing.

34. (Original) The system of Claim 28, wherein said means for determining combined data signals in said transmitting terminal comprises:

means for determining intermediate combined data signals by subband processing said data signals; and

means for determining said combined data signals from said intermediate combined data signals.

35. (Original) The system of Claim 34, wherein said means for subband processing comprises orthogonal frequency division demultiplexing.

36. (Original) The system of Claim 28, wherein said means for inverse subband processing comprises orthogonal frequency division multiplexing.

37. (Original) The system of Claim 28, wherein:

said subbands, being involved in inverse subband processing, are grouped into sets, at least one set comprising at least two subbands;

said means for determining combined data signals in said transmitting terminal comprises:

means for determining relations between said data signals and said combined data signals on a set-by-set basis; and

means for exploiting said relations between said data signals and said combined data signals for determining said data signals.

38. (Original) The system of Claim 28, wherein said means for inverse subband processing combined data signals comprises a guard interval.

39. (Original) The system of Claim 28, wherein said means for determining combined data signals further comprises means for transmitter filtering, and wherein said means for determining estimates of said sub-signals comprises means for receiver filtering, said means for transmitter filtering and said means for receiver filtering comprise means for determining on a user-per-user basis.

40. (Original) The system of Claim 28, wherein the number of said streams of data sub-signals is variable.

41. (Original) The system of Claim 28, wherein the number of said streams is selected in order to minimize the error between said estimates of said data sub-signals and said data sub-signals.

42. (Original) The system of Claim 28, wherein the number of said streams is selected in order to minimize the system bit error rate.

43-44. (**Cancelled**)